

Doc Code: AP.PRE.REQ

MAY 24 2007

PTO/SB/33 (07-05)

Approved for use through xx/xx/200x. OMB 0651-00xx
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1997, no person is required to respond to a collection of information unless it displays a valid OMB control number.

PRE-APPEAL BRIEF REQUEST FOR REVIEW

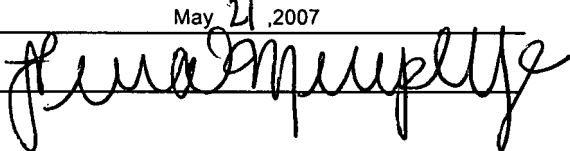
Docket Number (Optional)

00802-22001

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]

on May 21, 2007

Signature

Typed or printed
name

Tina Murphy

Application Number

10/627,442

Filed

7/25/2003

First Named Inventor

SUNG, CHIEN-MIN

Art Unit

1755

Examiner

Michael A. Marcheschi

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

I am the

☐

applicant/inventor.

☐

assignee of record of the entire interest.
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.
(Form PTO/SB/96)

☒

attorney or agent of record.

Registration number 44,989

☐

attorney or agent acting under 37 CFR 1.34.

Registration number if acting under 37 CFR 1.34



Signature

David W. Osborne

Typed or printed name

801-566-6633

Telephone number

May 21, 2007

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required.
Submit multiple forms if more than one signature is required, see below*.

☐

*Total of forms are submitted.

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



Patent App. SN: 10/627,442
Attorney Docket No. 00802-22001

REASONS FOR PRE-APPEAL BRIEF REVIEW

In the Advisory Action mailed April 2, 2007, Claims 1-5 and 9-17 were pending for consideration. The Examiner withdrew all rejections except for those based on new art presented in the Final Office Action of January 24, 2007. Specifically, Claims 1-7 and 16-17 were rejected under 35 U.S.C. § 102(b) as allegedly anticipated by WO 02/09909. Claims 8-12-15 were rejected under 35 U.S.C. § 103(a) as allegedly obvious: Claims 8-10 as allegedly obvious over WO 02/09909, Claims 11 and 15 as allegedly obvious over WO 02/09909 in view of Cerutti, and Claims 12-14 as allegedly obvious over WO 02/09909 in view of Cerutti in view of Phaal and Wentorf. In the response submitted by the Applicant under 37 C.F.R. § 1.116 to the Final Office Action, the Applicant submitted amendments to Claim 1 for clarity and to include the limitations of originally filed Claim 8. Such amendments overcame the five previously cited rejections, thus leaving the four rejections presented for the first time in the Final Office Action.

The Advisory Action was unclear as to what grounds are used at present to reject Claim 1. As Claim 1 now contains the subject matter of previous Claim 8, Applicant believes Claim 1 to be rejected under the previous rejection of Claim 8, i.e. under 35 U.S.C. § 103(a) as allegedly obvious: over WO 02/09909. The following discussion is therefore focused on the lack of teaching each and every element and teaching away from a modification of the reference to the presently claimed invention. This does not preclude Applicant from arguing additional deficiencies in the cited references during any later Appeal proceedings or prosecution, such as lack of teaching of additional elements.

The Claimed Invention

The present invention, as recited in independent Claim 1, provides for a nanodiamond article comprising a mass of sintered nanodiamond particles. Specifically, the claim requires nanodiamond particles that have an average diameter of from about 2 nm to about 30 nm. The mass includes at least 95% by volume of nanodiamond. Of the remaining 5%, at least 3% is composed of any combination of nanodiamond or non-diamond carbon. Further, the mass is free of residual catalyst.

The WO 02/09909 Reference

WO 02/09909 teaches an abrasive product that comprises a polycrystalline mass of self-bonded abrasive particles of irregular shape. In one embodiment, the abrasive particles can be diamond. In discussing diamond, the reference notes that the maximum particle size is typically 60 microns, preferably 50 microns. In the same sentence, the reference notes a “...lower limit of particle size of 0.1 microns.” emphasis added, pg. 8, ln. 26-30. The reference next discusses appropriate particle sizes for cubic boron nitride particles. The noted lower limit of 0.1 microns is equal to 100 nm. In Claim 9, WO 02/09909 requires particle size of the diamond particles not exceeding 50 microns. The Examples teach diamond crystals having a particle size range of 3-5 microns (Example 1), 0.5-1 microns (Example 2), less than 0.5 microns, 34-40 microns, 8-16 microns, 49-57 microns, 3-5 microns, and 3-5 microns (Examples 3-8, respectively). The reference is clear that 0.1 micron (100 nm) is the lower limit, as indicated by the noted statement above, and the Examples are consistent with the expressed lower limit of 0.1 micron.

The WO 02/09909 reference does not teach nanodiamond particles with an average diameter of about 2 nm to about 30 nm

The Examiner has failed to present a case of *prima facie* obviousness based on the reference WO 02/09909 for lack of at least teaching of nanodiamond particles with an average diameter of from about 2 nm to about 30 nm. In the Final Office Action, the Examiner noted that WO 02/09909 teaches a size of less than 60 microns, and then stated, “this encompasses and therefore makes obvious the claimed nanometer size because the reference overlaps the claimed range.” pg. 7, ln. 19-22. While the Applicant does not disagree that overlapping ranges have been held to be *prima facie* obviousness, the Applicant respectfully submits that such is not the case with the present application. Regarding the particle size, WO 02/09909 teaches that 60 microns is a maximum particle size, and clearly states that 0.1 microns is a minimum particle size. pg. 8, ln. 26-30. The range 0.1- 60 microns, as taught in WO 02/09909, is clearly outside of the claimed range of about 2 nm to about 30 nm of the present application. To compare, WO 02/09909 teaches 100-60,000 nm. The present application is directed to a very specific and much smaller size range of about 2-30 nm. There is no overlap of ranges. The two ranges are even labeled in units having 3 orders of magnitude difference. Applicant is not arguing that such measurement units are dispositive, however, it does indicate to some extent, the discrepancy in particle size used in the different technologies.

The reference makes a clear statement of a lower limit, which is outside the presently claimed range. The use of only an upper limit in the claim cited by the examiner does not take away from the strong teaching of a lower limit in the specification. Therefore, the reference does not teach the

claimed range of about 2 nm to about 30 nm.

The WO 02/09909 teaches away from modification to about 2 nm to about 30 nm

While the reference does teach an upper particle size limit, as identified by the Examiner, the reference further, and immediately following teaching of the upper limit, teaches a lower particle size limit. Therefore, one of ordinary skill would not take the taught size “less than 60 microns” as an open-ended downwardly extending range. Rather, the context of the reference teaches a size range that does not overlap and is not near the claimed size range of the present invention. Such a conclusion is supported by the Examples. Particularly, Example 3 of the reference, which uses diamonds with a particle size of “less than 0.5 microns” results in a porosity of 5%, which is the lowest end of allowable porosities, as noted in the specification (pg. 5, ln. 11-13), and claimed in Claim 4. In fact, the preferable porosity, as identified in the specification and in Claim 5 is 10-25%. One of ordinary skill in the art would not be inclined to use particles of smaller size as the reference teaches, both explicitly and implicitly through experimental results, that 0.1 microns is the lower limit of diamond particle size.

In light of the above comments, Applicant respectfully submits that WO 02/09909 fails to teach or suggest each of the elements of the claimed invention. Further, the reference fails to provide motivation to modify the reference to the presently claimed invention. As such, a *prima facie* case necessary to support a §103 rejection was not established in the Office Action. All additional rejections are based on WO 02/09909 in combination with other references. The additional references Cerutti, Phaal, and Wentorf do not remedy the deficiency in WO 02/09909 of failing to teach each and every element, and teaching away from modification to the present invention.

CONCLUSION

In view of the foregoing, Applicant believes that the present rejections are unsustainable and should be withdrawn. Therefore, Applicant respectfully requests that the prosecution be reopened and/or the claims be allowed. If any impediment to the allowance of these claims remains after consideration of the above remarks, and such impediment could be resolved during a telephone interview, the Examiner is invited to telephone Mr. David Osborne at (801) 566-6633, to address such issues as expeditiously as possible.

Dated this 21 day of May, 2007.

Respectfully submitted,

THORPE, NORTH & WESTERN, LLP



David W. Osborne
Reg. No. 44,989
8180 South 700 East, Suite 350
Sandy, UT 84070
Telephone: (801) 566-6633
Facsimile: (801) 566-0750

DO/SA/tm